

U.S.S.N. 09/714,469

Filed: November 16, 2000

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by extrusion, molding, coating, spinning, blowing, thermoforming or calendaring processes or combination of the processes.

RemarksAmendment to the claims

Claims 42 and 46 have been amended to additionally recite the limitation "with no plasticizer." Support for the amendment is found explicitly at p. 19, line 1, and p. 33, line 1 to p. 34, line 20.

Rejection Under 35 U.S.C. § 102

Claims 42-49 were rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 5,753,782 to Hammond et al. ("Hammond"). Applicants respectfully traverse this rejection if applied to the claims as amended.

Hammond

Hammond is directed to a polyester composition formed of a biodegradable polyester and a plasticising quantity of a plasticiser (col. 1, lines 28-42). The plasticiser is one of high-boiling organic molecules, phosphoric acid derivatives, phosphorous acid derivatives, or phosphonic acid derivatives (col. 1, lines 31-42). Hammond also provides that other usual materials such as a nucleant can be added (col. 6, lines 48-53). Therefore, the critical aspect of Hammond is the use of one or more of the plasticisers defined therein (col. 1, lines 28-42).

Hammond generally requires a polyester having units as defined at col. 2, lines 24-41. Preferred polyester is PHB or copolymer PHBV (col. 2, lines 36-37). Hammond does not specifically disclose poly(3-hydroxybutyrate-co-4-hydroxybutyrate).

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The Claimed Invention

In contrast, claims 42-49, as amended, are drawn to a composition, and articles formed thereof, comprising poly(3-hydroxybutyrate-co-4-hydroxybutyrate) and a nucleant with no plasticizer. Claims 42-49, as amended, do not require and specifically exclude the use of a plasticiser. Claims 42-49, as amended, have explicit support in Examples 1 and 24. As Examples 24-26 at pages 33 and 34 demonstrate, the polymer composition thus formed have excellent physical properties such as good ductility, versatility, and aging characteristics (see Table 7) even without the use of a plasticiser.

Therefore, the claimed composition and the articles formed thereof differ from the composition defined in Hammond at least in two aspects: (1) the claimed composition does not require a plasticiser, which is critical to the composition defined in Hammond, and (2) the claimed composition requires a copolymer which is not specifically disclosed by Hammond.

As such, Hammond does not anticipate claims 2, 4-9 and 20 under 35 U.S.C. § 102(e) (see, *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131).

As a support for the rejection, the Examiner pointed out, at p. 2, paragraph 7 of the Office Action mailed June 14, 2002, that the specification of the present application at p. 10, lines 1-22, especially lines 20-21 discloses PHB. However, the claims rather than the disclosure define the claimed subject matter under examination (see, *IMS Technology, Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 54 USPQ2d 1129 (Fed. Cir. 2000)). Therefore, as long as the claimed subject is enabled and sufficiently described in the

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other than the claimed subject matter is irrelevant to the issue of anticipation under 35 U.S.C. § 102.

Rejection under 35 U.S.C. 103

Claims 42-49 were rejected under 35 U.S.C. 103 over Hammond. The applicants respectfully traverse the rejection if it is applied to the claims as amended. As discussed above, Hammond requires the use of one or more plasticisers to improve the processability of the polyesters defined therein (col. 1, lines 24-27). This critical element is clearly missing from the claims as amended. Yet, as shown in Examples 24-26 described on pages 33-34, the claimed polymer has an excellent versatility, i.e., ductility, elongation rate, and aging characteristics (see Table 7). This clearly establishes that the claims as amended are non-obvious over Hammond (see, *In re Edge*, 359 F.2d 896, 149 USPQ 556 (CCPA 1966); see also MPEP § 2144.04(II)(B)).

Moreover, the fact that Hammond is directed to the use of a plasticiser to improve the processability of the polyester described therein indicate that Hammond does not provide one of ordinary skill in the art the motivation to make and use a polyester composition with no plasticiser. Even if one argued the Hammond did provide such as motivation, one still would not have a reasonable expectation of success of the claims as amended because, as discussed above, the use of one or more plasticisers is critical to the composition described therein. As such, Hammond would not render claims 42-49, as amended, *prima facie* obvious under 35 U.S.C. 103 (see, *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986); see also MPEP § 2141).

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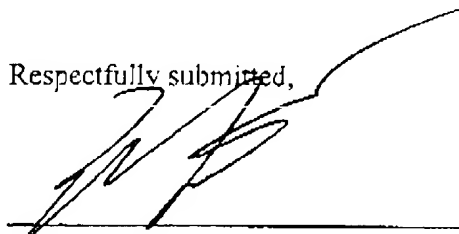
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polymer composition, and the use thereof, claimed in the amended claims 42-49 surprisingly has an excellent versatility, i.e., ductility, elongation rate, and aging characteristics (see Examples 24-26, Table 7). The surprising results achieved by claims 42-49, as amended, rebuts any alleged *prima facie* obviousness (see MPEP § 2141).

The applicants honestly solicit the allowance of claims 42-49. A copy of claims as pending are attached as appendix for the Examiner's convenience.

Respectfully submitted,

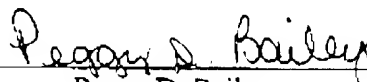

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I hereby certify that this paper, along with any paper referred to as being attached or enclosed is being deposited with the United States Postal Service on the date, shown below with sufficient postage as first-class mail, to the U.S. Patent and Trademark Office, Washington, DC 20231.


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Appendix I: Marked-up Copy of Claims as Pending

42. (amended) A polymer composition comprising poly-3-hydroxybutyrate-co-4-hydroxybutyrate (P3HB4HB) and a nucleant with no plasticizer.
43. The composition of claim 42 wherein the nucleant is boron nitride.
44. (Amended) The composition of claim 42 wherein the nucleant is present at levels from 0.1 to 20-wt% of the composition.
45. (Amended) The composition of claim 42 wherein the nucleant is present at levels from 1 to 10 wt% of the composition.
46. (amended) A method of producing a shaped polymeric object comprising melting a composition comprising poly-3-hydroxybutyrate-co-4-hydroxybutyrate (P3HB4HB) and a nucleant with no plasticizer, and producing a shaped object therefrom by extrusion, molding, coating, spinning, blowing, thermoforming or calendaring processes or combination of the processes.
47. The method of claim 46 wherein the nucleant is boron nitride.
48. A shaped object made according to claim 46.
49. A shaped object made according to claim 47.

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Appendix II: Clean Copy of Claims as Pending

42. (amended) A polymer composition consisting essentially of poly-3-hydroxybutyrate-co-4-hydroxybutyrate (P3HB4HB) and a nucleant with no plasticizer.
43. The composition of claim 42 wherein the nucleant is boron nitride.
44. (Amended) The composition of claim 42 wherein the nucleant is present at levels from 0.1 to 20-wt% of the composition.
45. (Amended) The composition of claim 42 wherein the nucleant is present at levels from 1 to 10 wt% of the composition.
46. (amended) A method of producing a shaped polymeric object comprising melting a composition consisting essentially of poly-3-hydroxybutyrate-co-4-hydroxybutyrate (P3HB4HB) and a nucleant with no plasticizer, and producing a shaped object therefrom by extrusion, molding, coating, spinning, blowing, thermoforming or calendaring processes or combination of the processes.
47. The method of claim 46 wherein the nucleant is boron nitride.
48. A shaped object made according to claim 46.
49. A shaped object made according to claim 47.

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